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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,527	09/27/2001	Kunie Ogata	OMY-013	9266
23353	7590	11/26/2004	EXAMINER	
RADER FISHMAN & GRAUER PLLC			RUGGLES, JOHN S	
LION BUILDING			ART UNIT	
1233 20TH STREET N.W., SUITE 501			PAPER NUMBER	
WASHINGTON, DC 20036			1756	

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/963,527

Applicant(s)

OGATA ET AL.

Examiner

John Ruggles

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16-23 and 26-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-23 and 26-29 is/are rejected.
- 7) ☒ Claim(s) 16-23 and 26-29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7 September 2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Claims 1-15, 24-25, and 30 have been cancelled. Claims 16-23, 26, and 28-29 have been currently amended. Claim 27 remains as previously presented. Therefore, only claims 16-23 and 26-29 remain under consideration.

### ***Specification***

The submission on 7 September 2004 of a third substitute specification to correct additional numerous errors in the previous second substitute specification filed on 8 January 2004 is hereby acknowledged. However, this third substitute specification is still replete with terms that are not clear, concise, and exact. The specification should again be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some remaining unclear, inexact or verbose terms found in the marked up version of this third substitute specification are: (1) at page 1 lines 5-7, "semiconductor wafer" should be corrected to --a semiconductor wafer--, "glass substrate" should be --a glass substrate--, and "developing the substrate[[s]]" (emphasis added) should be --developing the substrate--; (2) at page 1 lines 15-16, "when the is processed" should be corrected to --when the wafer is processed--; and (3) at page 42 line 18, "and  $\mu_4$ , etc." should be changed to --and  $\mu_4$ --, in order to be grammatically correct. Note that due to the number of errors, those listed here are merely examples of the changes required in the substitute specification and do not represent an exhaustive list thereof.

Appropriate correction is required. An amendment filed making all appropriate corrections must be accompanied by a statement that the amendment contains no new

matter and also by a brief description specifically pointing out which portion of the original specification provides support for each of these corrections.

Applicants' substitute amended abstract has overcome the previous abstract objections, which are now withdrawn.

### ***Claim Objections***

Currently amended versions of the claims have overcome most of the previous objections to the pending claims. The remaining objections are restated below along with new objections necessitated by amendment.

Claims 16-23 and 26-29 are objected to because of the following informalities: (1) at claim 16 lines 36-37, "and  $P_2$  respectively, the" should be changed to --and P, respectively, the-- and " $\mu_4 P_2$ " should be changed to -- $\mu_4 P$ -- (to be consistent with "P" found in the amended third substitute specification at page 42 lines 15-16, since it is believed that Applicants may have mistaken the previously underlined comma (to add emphasis thereto) after the letter --P-- to be a subscripted "2" in the previous objection mailed on 5 May 2004) and (2) at claim 21 line 7, the remaining occurrence of "development" should be changed to --developing--, in order to be consistent with claim 16 step (c) as the antecedent basis for the --developing--. Claims 17-23 and 26-29 are dependent on claim 16. Appropriate correction is again required.

***Claim Rejections - 35 USC § 112***

The previous rejection under the first paragraph of 35 U.S.C. 112 has been overcome by Applicants' arguments on pages 12-13 of the submission filed on 7 September 2004. Therefore, this previous rejection is hereby withdrawn.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 16-23 and 26-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

In claim 16 step (a) for forming a resist film, it is unclear whether "a base film and a base pattern being formed" (emphasis added) found in lines 2-3 refers to (1) the resist film formed in this step or (2) an underlying base film and a base pattern already on the substrate now being coated by the resist. Page 20 lines 4-5 of the instant third substitute specification filed 7 September 2004 state, in part, "...measurement data of the reflection ratio of the base film measured before resist coating" (emphasis added). This suggests the latter interpretation (2). However, claim 16 must still be amended in response to this rejection.

Furthermore, in claim 16 step (d), the phrase "an accuracy that the base pattern matches with a resist pattern" is also unclear since it is not apparent how such a comparison could be made or would even be useful unless (i) the base pattern had been formed by transfer of the pattern in the overlying resist (e.g., by etching through the resist

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pattern, etc.) *and* (ii) any intervening layer(s), such as the base film, had also already been patterned (e.g., by etching through the resist pattern, etc.), but such patterning or etching of the base pattern and the base film *through the overlying resist pattern* has not yet been claimed. Although rewritten from prior versions, this comparison in claim 16 still lacks antecedent basis and does not even appear to be adequately supported in the original specification filed on 27 September 2001 to enable one of ordinary skill in the art to understand and employ such a comparison of accuracy for the base pattern relative to the overlying resist pattern. Claims 17-23 and 26-29 are dependent on claim 16.

Claim 22 line 6 lacks antecedent basis for “the etched line”. The examiner suggests changing the phrase “a line width of the etched line” recited in claim 22 line 6 to the simpler phrase --an etched line width--, in order to overcome this rejection and provide better antecedent basis for the subsequently recited phrase “the etched line width” in lines 7-8.

Similarly, claim 23 lines 2-3 and claim 28 lines 2-3 both lack antecedent basis for “the etched line width”.

### ***Claim Rejections - 35 USC § 103***

The previous rejection of claim 30 under 35 U.S.C. 103(a) is now moot, because claim 30 has now been cancelled.

***Allowable Subject Matter***

Claim 16 would be allowable if rewritten or amended to overcome both the claim objection and the rejection(s) under 35 U.S.C. 112, 2nd paragraph, as set forth above in this Office action.

Claims 17-23 and 26-29 would be allowable if rewritten to overcome both the claim objections and the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth above in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: while a resist film thickness formed by spin coating is known to depend on the temperature of resist liquid supplied to a substrate ( $T_r$ ), the ambient temperature ( $T_c$ ), the humidity ( $H_c$ ), and/or the pressure ( $P$ ) in a coating unit during spin coating as discussed above, the more specific relationship described by the formula:

$$R_t = \alpha (\mu_1 T_r + \mu_2 T_c + \mu_3 H_c + \mu_4 P)$$

where  $\alpha$  is a constant and  $\mu_1$ ,  $\mu_2$ ,  $\mu_3$ , and  $\mu_4$  are coefficients describing the degree of contribution for each of  $T_r$ ,  $T_c$ ,  $H_c$ , and  $P$ , respectively, is distinguished over the prior art, which does not teach this specific formula for the resist film thickness,  $R_t$ , formed during spin coating.

As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

***Response to Arguments***

While Applicants have corrected many of the previous errors in the second substitute specification by submission of a third substitute specification on 7 September 2004, numerous errors still remain. These remaining errors are again represented by a very limited set of examples listed above, because of the large number of errors still needing correction. The specification should again be more carefully and fully revised in order to comply with 35 U.S.C. 112, first paragraph.

The amended substitute abstract has overcome previous objections thereto. Therefore, these previous objections have now been withdrawn as stated above.

The currently amended versions of the claims have overcome most of the previous objections, but have also necessitated further new objections. Remaining objections not yet overcome have been set forth above.

Currently amended versions of the claims along with accompanying arguments on pages 12-13 have overcome the previous rejection under the first paragraph of 35 U.S.C. 112, as indicated above. However, the remaining rejection under the second paragraph of 35 U.S.C. 112 was not adequately addressed and has been maintained above.

Applicants' arguments with respect to the merits of pending claims 16-23 and 26-29 are persuasive in view of current amendments to the claims, except for only the remaining formal matters set forth above.

Allowable subject matter that was previously identified in claim 24, which was previously cancelled, is now found in all of the remaining claims (pending claims 16-23



and 26-29), but all of these claims are again objected to and rejected due solely to new and residual formal matters (objections and rejections) set forth above.

The new objections and changes to the previous formal rejections under the second paragraph of 35 USC 112 in this action have been necessitated by amendment and are therefore now made FINAL.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of objection as well as changes to the formal rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Ruggles whose telephone number is 571-272-1390. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John Ruggles  
Examiner  
Art Unit 1756



MARK HUFF  
SUPERVISOR  
TECHNOLOGY CENTER 1700